What is claimed is:

1. A semiconductor laser device comprising:

a semiconductor substrate of first conductivity type;

a first cladding layer of first conductivity type provided on the semiconductor substrate;

an active layer provided on the first cladding layer and having uniformly flat upper and lower boundary surfaces in the direction of an optical waveguide;

a second cladding layer of second conductivity type provided on the active layer; and

a diffraction grating layer having a phase-shifted structure, provided in the direction of the optical waveguide between the first cladding layer and the active layer or between the second cladding layer and the active layer, wherein

the length L of the diffraction grating layer in the direction of the optical waveguide is taken as $L \leq 260\ \mu m$; a mean coupling factor κ of a diffraction grating layer is taken as $\kappa \geq 150\ cm^{-1}$; and a value κL, which is the product of the length L and the mean coupling factor κ, is taken as $5.6 > \kappa L > 3.0$.

2. The semiconductor laser device according to claim 1, wherein the power threshold gain αth per unit length in a principal axial mode is set to $7\ cm^{-1} \leq \alpha th \leq 51\ cm^{-1}$.

3. The semiconductor laser device according to claim 1 or 2, further comprising:

a heavily-doped region doped with p-type impurities at a carrier concentration of $10^{18}\ cm^{-3}$ in at least a portion of a layer of p-conductivity type located proximate to an active layer or a portion of the active layer.

4. The semiconductor laser device according to claim 2, further comprising:

a heavily-doped region doped with p-type impurities at a carrier concentration of $10^{18}\ cm^{-3}$ in at least a portion of a layer

of p-conductivity type located proximate to an active layer or a portion of the active layer.

5. The semiconductor laser device according to claims 1, wherein there is further achieved

$$\lambda p - 100 \le \lambda g \le \lambda p + 100,$$

provided that a composition wavelength of the diffraction grating layer is taken as λg (nm) and an oscillation wavelength is taken as λp (nm).

6. The semiconductor laser device according to claims 2, wherein there is further achieved

$$\lambda p - 100 \le \lambda g \le \lambda p + 100,$$

provided that a composition wavelength of the diffraction grating layer is taken as λg (nm) and an oscillation wavelength is taken as λp (nm).

7. The semiconductor laser device according to claims 3, wherein there is further achieved

$$\lambda p - 100 \le \lambda g \le \lambda p + 100,$$

provided that a composition wavelength of the diffraction grating layer is taken as λg (nm) and an oscillation wavelength is taken as λp (nm).

8. The semiconductor laser device according to claims 4, wherein there is further achieved

$$\lambda p - 100 \le \lambda g \le \lambda p + 100,$$

provided that a composition wavelength of the diffraction grating layer is taken as λg (nm) and an oscillation wavelength is taken as λp (nm).

9. The semiconductor laser device according to claims 1, wherein the length of a highly-refractive portion constituting diffraction grating of the diffraction grating layer is set so as to become longer than that of a low-refractive portion of the diffraction grating layer in the direction of the optical waveguide.

10. The semiconductor laser device according to claims 2,

wherein the length of a highly-refractive portion constituting diffraction grating of the diffraction grating layer is set so as to become longer than that of a low-refractive portion of the diffraction grating layer in the direction of the optical waveguide.

11. The semiconductor laser device according to claims 3, wherein the length of a highly-refractive portion constituting diffraction grating of the diffraction grating layer is set so as to become longer than that of a low-refractive portion of the diffraction grating layer in the direction of the optical waveguide.

12. The semiconductor laser device according to claims 4, wherein the length of a highly-refractive portion constituting diffraction grating of the diffraction grating layer is set so as to become longer than that of a low-refractive portion of the diffraction grating layer in the direction of the optical waveguide.

13. The semiconductor laser device according to claims 5, wherein the length of a highly-refractive portion constituting diffraction grating of the diffraction grating layer is set so as to become longer than that of a low-refractive portion of the diffraction grating layer in the direction of the optical waveguide.

14. The semiconductor laser device according to claims 6, wherein the length of a highly-refractive portion constituting diffraction grating of the diffraction grating layer is set so as to become longer than that of a low-refractive portion of the diffraction grating layer in the direction of the optical waveguide.

15. The semiconductor laser device according to claims 7, wherein the length of a highly-refractive portion constituting diffraction grating of the diffraction grating layer is set so as to become longer than that of a low-refractive portion of the diffraction grating layer in the direction of the optical waveguide.

16. The semiconductor laser device according to claims 8, wherein the length of a highly-refractive portion constituting diffraction grating of the diffraction grating layer is set so as to

become longer than that of a low-refractive portion of the diffraction grating layer in the direction of the optical waveguide.